IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant	: Srinivasan Ramasubramanian et al.	Art Unit	: 2163
Serial No.	: 10/784,568	Examiner	: Tuankhanh Phan
Filed	: February 23, 2004	Conf. No.	: 8638
Title	: ACCESS MECHANISMS FOR EFFICIENT SHARING IN A NETWORK		

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RESPONSE AFTER FINAL REJECTION UNDER 37 C.F.R. 1.113

In the Office Action mailed June 19, 2008, all pending claims 1 and 3-32 were rejected, and the rejection was made final. Applicants respectfully submit that all pending claims 1 and 3-32 are in condition for allowance, and ask that the finality of the rejections be withdrawn and the claims be allowed.

Claim Rejections – 35 USC 112

1. Successive Transmission Rounds and Successive Processing Cycles

First, claims 1, 3-10, 22-27 and 29 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. In particular, the Office Action contended that the recitation of "successive transmission round(s)" and "successive processing cycles" was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicants disagree. In particular, in claim 1 for example, the claim recites:

> transmitting data packets from the specific one node in the first direction in successive transmission rounds, wherein in each successive transmission round there is transmitted i) one or more data packets from the first transit buffer that each have the same assigned transit buffer round identifier, if any data packets are present in the first transit buffer, and ii) one or more data packets from the first local buffer, if any data packets are present in the first local buffer.

Applicants' specification clearly discloses a fair and efficient transmission scheme in which, during successive rounds or cycles, the data identified in parts i) and ii) of the above-recited claim element are transmitted. (See page 10, lines 14-24; and page 14, lines 5-8.) In

addition, Applicants' specification discloses that packets are transmitted in groups that are referred to, interchangeably, as "rounds" or "cycles." For example, Applicants' specification provides an introductory explanation of the transmission process in which it is described that the transmission is done "in a schedule, or series, of transmission rounds over a period of time." (Page 14, lines 5-8.) The specification then goes on and provides an example of what data packets are transmitted in each of three successive cycles (see Page 14, line 21 to page 15, line 11)), thus making clear to one of skill in the relevant art the interchangeable use in the specification of the terms "rounds" and "cycles" when referring to the grouping of packets for transmission.

Accordingly, Applicants submit that the specification clearly conveys to a person of skill in the art that the inventors, at the time the application was filed, had possession of the claimed subject matter, whether stated in terms of transmission rounds or processing cycles, and ask that the Section 112, first paragraph rejection of claims 1, 3-10, 22-27 and 29 be withdrawn.

2. Specific One Node

Second, claims 1, 3-21, 27-28 and 30 were rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. In particular, the Office Action contended that the recitation of "a (the) specific one node" was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicants again disagree.

The use of "specific one node" in the claims is used to make clear that the operations recited in the claims are performed by one particular node in a multi-node network. This is indeed the case in the system described in Applicants' specification. In particular, Applicants' specification describes throughout operations performed by a particular node within a multi-node system. That is what is being claimed. It may be, and in fact typically will be the case, that all of the nodes in the network perform similarly, but that fact is irrelevant, as the operations recited in Applicants' claims are focusing on one particular node within the multi-node system.

Accordingly, Applicants submit that the specification clearly conveys to a person of skill in the art that the inventors, at the time the application was filed, had possession of the claimed

subject matter, and ask that the Section 112, first paragraph rejection of claims 1, 3-21, 27-28 and 30 be withdrawn.

Claim Rejections – 35 USC 102 and 103

Claims 1, 3-9 and 11-32 continue to stand rejected under 35 U.S.C. 102 as allegedly being anticipated by Yamamoto et al. (US Pub. 20030043855) ("Yamamoto"). The remaining dependent claim 10 continues to stand rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Gollnick et al. (US Patent 5,940,771) ("Gollnick").

Applicants submit that the Office Action continues to fall short at identifying each and every limitation of Applicants' claims, and submit that pending independent claims 1, 11, 22 and 27-29 each defines subject matter that is patentable over Yamamoto alone or combined with Gollnick, as do the pending dependent claims.

In particular, Applicants have come up with a new and non-obvious way of efficiently moving data through networks such as ring or daisy-chain networks. In particular, Applicants' approach involves a fair and efficient use of network bandwidth through the use of a fair and efficient way of controlling transmissions from each node, and in particular intermingling in each node the transmission of packets originating in the node (and stored in a node's "local buffer") and packets received by the node but destined for another node (and stored in the node's "transit buffer").

As explained previously, including in the examiner's interview conducted March 14, 2008, Applicants have done this through the use of transmission rounds or cycles. In various described embodiments, each of the nodes in the network sends packets in transmission rounds, and typically, multiple packets are sent in each transmission round. In a single transmission round, for example, some of the packets being sent by a node may have been generated by other nodes (and thus are "in transit" in the node), while other packets may have been generated locally within the node. Each packet that is transmitted contains what is called a "transmission round identifier," which identifies the transmission round in which the packet was sent. Thus, a receiving node is able to determine, for each of the "in transit" packets it receives, the transmission round of the preceding node in which the packet was sent. This information is used to set a limit on the "in transit" packets that the node sends in each of its transmission rounds

(namely, it can only send "in transit" packets that were sent by the prior node in the same transmission round), thus giving fair opportunity for locally generated packets to enter the transmission stream.

Referring to claim 1 for example,

> 1. (Previously Presented) A computer-implemented method for processing data on a specific one node in a network comprising a plurality of nodes configured in a topology in which data, to reach an intended destination node, are transmitted through a configured node-to-node sequence, each of the nodes having a different node identifier that distinguishes the node from other nodes in the network, the method comprising:
>
> receiving data packets at the specific one node, **each received data packet being transmitted by a prior node** in a first direction through the configured node-to-node sequence **and comprising** a destination node identifier and **a transmission round identifier indicating a transmission round of a prior node in which the data packet was sent**;
>
> for each received data packet,
>
> i) **if the transmission round identifier for the packet does not match a transmission round identifier for an immediately preceding received data packet, changing a first transit buffer round indicator for a first transit buffer in the specific one node**;
>
> ii) **if the destination identifier for the data packet does not match the node identifier of the specific one node, storing the data packet in the first transit buffer for later transmission by the specific one node to another node in the first direction, the data packet being stored with an assigned indicator of the current transit buffer round**; and
>
> iii) if the destination identifier of the data packet matches the node identifier, processing the data packet on the specific one node;
>
> **storing data packets originating at the specific one node in a first local buffer** of the specific one node for later transmission by the specific one node to another node in the first direction; and
>
> **transmitting data packets from the specific one node in the first direction in successive transmission rounds**, wherein in **each successive transmission round there is transmitted** i) **one or more data packets from the first transit buffer that each have the same assigned transit buffer round identifier, if any**

> data packets are present in the first transit buffer, **and** ii) **one or more data packets from the first local buffer, if any** data packets are present in the first local buffer.

As highlight above, the last element of the claim requires that each of the "in transit" packets sent in a particular transmission round has "the same assigned transit buffer round identifier." As recited earlier in the claim (and highlighted above), the "assigned transit buffer round" changes when a packet is received from the preceding node in a new transmission round of that preceding node. As such, the transmission rounds of the preceding node limit the number of "in transit" packets that can be sent by a node in a transmission round. In addition, the fact that packets from the local buffer, if there are any, are included in each transmission round prevents "hogging" of the network by "in transit" packets in a novel and non-obvious manner.

Yamamoto, by contrast, discloses nothing of the sort. Indeed, Yamamoto discloses a communication device and a node device used therein. (Title.) Yamamoto discloses in FIG. 6 an example of a network system using a node device shown in FIGS. 5A and 5B. The network shown in FIG. 6 has four such node devices in a ring topology. (Para. 0061.) Yamamoto discloses the processing of packets received at nodes and the use of buffers in that processing. (For example, Paras. 0032-0059.)

With respect to Applicants' claim 1, there is no disclosure or suggestion in Yamamoto of the last element of Applicants' claim 1 of "transmitting data packets from the specific one node in the first direction in successive transmission rounds, wherein in each successive transmission round there is transmitted i) one or more data packets from the first transit buffer that each have the same assigned transit buffer round identifier, if any data packets are present in the first transit buffer, and ii) one or more data packets from the first local buffer, if any data packets are present in the first local buffer." In addition with respect to claim 1, there is no disclosure or suggestion in Yamamoto of the preceding recitation in Applicants' claim 1 of, "for each received data packet, i) if the transmission round identifier for the packet does not match a transmission round identifier for an immediately preceding received data packet, changing a first transit buffer round indicator for a first transit buffer in the specific one node; [and] ii) if the destination identifier for the data packet does not match the node identifier of the specific one node, storing the data packet in the first transit buffer for later transmission by the specific one node to another node in

the first direction, the first data packet being stored with an assigned indicator of the current transit buffer round."

With respect to the last element of Applicants' claim 1 (namely, the "transmission" element), the Office Action refers to paragraphs 45, 46 and 50 of Yamamoto. (See Office Action, page 6, lines 4-5.) These paragraphs, like the rest of Yamamoto, do not disclose or suggest the claim element in dispute. In particular, paragraph 45 of Yamamoto simply describes the storage, in a particular node, of a non-broadcast packet (in which the B-bit is 0) that is not destined for the particular node in certain buffers of the particular node (namely buffers 511-518 shown in FIG. 5B), and paragraph 46 of Yamamoto simply describes storage for broadcast packets (in which the B-bit is 1). Paragraph 50 of Yamamoto simply describes certain configuration information that is preliminarily stored in a header detector portion of each node, for example, the node's number assigned to the node, etc. None of these paragraphs provides any support for the contentions in the Office Action regarding the last element of claim 1.

With respect to claim 1's recitation of "for each received data packet, i) if the transmission round identifier for the packet does not match a transmission round identifier for an immediately preceding received data packet, changing a first transit buffer round indicator for a first transit buffer in the specific one node," the Office Action refers to paragraph 33, lines 1-5, of Yamamoto. Paragraph 33 provides no support for the claim element at issue being disclosed or suggested by Yamamoto. Rather, the cited portion of Yamamoto simply describes the unremarkable feature of address detection. This again provides no support for Yamamoto disclosing, as recited in claim 1, "changing a first transit buffer round indicator for a first transit buffer in the specific one node."

In addition with respect to claim 1's recitation of "for each round data packet, ...ii) if the destination identifier for the data packet does not match the node identifier of the specific one node, storing the data packet in the first transit buffer for later transmission by the specific one node to another node in the first direction, the first data packet being stored with an assigned indicator of the current transit buffer round," the Office Action refers to paragraphs 45, 46 and 50 of Yamamoto (discussed above), as well as Figure 22 of Yamamoto. These portions of Yamamoto do not disclose or suggest in any way a method in which "in transit" packets are stored with an assigned indicator of a current transit buffer round (which is changed, as recited

earlier in the claim, "if the transmission round identifier for the packet does not match a transmission round identifier for an immediately preceding received packet"). Paragraphs 45, 46 and 50 of Yamamoto, described above, relate in no way to this claim requirement of claim 1, and Figure 22 of Yamamoto is simply being relied upon in the Office Action for the proposition that a downstream direction may be a first direction and this also is of no support.

Turning now to independent claim 11, Yamamoto does not disclose or suggest a computer implemented method that comprises an operation in which "if the first transit buffer is determined to be not empty, transmitting in the first direction one or more data packets stored in the first transit buffer if a first transmission condition is satisfied, wherein a determination of whether the first transmission condition is satisfied depends on information regarding a most recently transmitted data packet transmitted by the specific one node in the first direction, and transmitting in the first direction a data packet stored in the first local buffer if the first transmission condition is not satisfied." Applicants note with respect to this claim element, the Office Action provides no support for the much of the claim language highlighted above. (See Office Action, at page 9, lines 6-8.)

Next, with respect to independent claim 22, Yamamoto does not disclose or suggest "using the local buffers and the transit buffers to process data between the nodes in processing cycles, wherein each node is capable of receiving data from another node, and wherein each node transmits to another node, in each successive processing cycle, i) one or more data packets from the transit buffer **that were each transmitted by a prior node in the same processing cycle**, if any data packets are present in the first transit buffer, and ii) one or more data packets from the first local buffer, if any data packets are present in the first local buffer." The reference to paragraphs 54 and 55 in the Office Action (see the paragraph spanning pages 12 and 13 of the Office Action), again, do not support the rejection.

Independent claim 27, 28 and 29 generally track, respectively, independent claims 1, 11 and 22, and therefore similarly are not disclosed or suggested by Yamamoto.

Therefore, Applicants submit that Yamamoto does not disclose or suggest the subject matter of any of Applicants' independent claims 1, 11, 22 and 27-29, and thus also does not disclose or suggest dependent claims 3-10, 12-21, 23-26, and 30-32. In addition, Gollnick, cited in connection with dependent claim 10, does not remedy the deficiencies of Yamamoto.

Accordingly, Applicants respectfully request that the art rejections of claims 1 and 3-32 be withdrawn.

Conclusion

Applicants submit that claims 1 and 3-32 are in condition for allowance, and requests that the Examiner issue a notice of allowance.

It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

No fee is believed due. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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